



# **Evaluation of the JISC UK LOCKSS Pilot**

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## **Disclaimer**

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## Executive Summary

This report provides an evaluation of the UK LOCKSS pilot project as it reaches the end of its pilot phase. LOCKSS (Lots Of Copies Keep Stuff Safe) is an international community-based archiving initiative led by Stanford University in the US with over 170 member libraries worldwide, archiving content from over 200 publishers. It is a community-based archiving service operating on open-source software, giving libraries control over their own archived content with the emphasis on low cost and low maintenance.

In March 2006, JISC in partnership with the Consortium of Research Libraries in the British Isles (CURL) funded membership of a collective UK LOCKSS Alliance for 24 selected UK HE libraries. The Digital Curation Centre (DCC) at the department of HATII within the University of Glasgow received funding to set up the UK LOCKSS Technical Support Service to provide technical advice and general support to pilot members and Content Complete Ltd. (CCL) were funded to negotiate with NESLi2 and other publishers to allow LOCKSS-based archiving. The UK LOCKSS pilot is particularly innovative as the first effort to establish a country wide LOCKSS network.

The study found that the UK LOCKSS pilot project had achieved its overall aim of setting up a UK LOCKSS Alliance of 30 HE libraries, but that in relation to the detailed aims and objectives there were a number of issues to be addressed if the project was to become self-sustaining at the end of the pilot phase.

**Technical support** had worked well and few significant technical problems had been encountered in setting up the LOCKSS boxes within pilot libraries. The UK LOCKSS Technical Support Service set up by the Digital Curation Centre had provided good support and effective liaison with the US-based LOCKSS Alliance. While support itself had been good, there were important issues for the UK HE community that had not yet been resolved, notably the inability to link archived content to the library management system through link resolvers. Some of the delays in making publisher content available in LOCKSS appeared to be due to problems in technical implementation.

**Building a substantial collection of e-journals** had not been wholly achieved. A number of larger NESLi2 publishers had not joined LOCKSS and currently appear unlikely to do so now that other e-journal archiving solutions were available. This was a disappointment to pilot members, who had hoped initially to archive this content. Although some NESLi2 and other large publishers were in LOCKSS, there was a recognition that the model may be more appropriate for small and medium publishers, whose content was more likely to be at risk. LOCKSS was also suitable for open access publishers, as was shown by the interest in the JISC-funded OpenLOCKSS project run by the University of Glasgow.

**NESLi2 publisher negotiation** had not been wholly successful. Despite the best efforts of Content Complete Ltd, a number of NESLi2 and other publishers approached had opted not to join LOCKSS and others remained undecided. The pilot had demonstrated the long timescale needed both for negotiating with publishers and getting content into LOCKSS once agreement was reached. The flexibility demonstrated in the change of approach to include non NESLi2 publishers as the focus of negotiation is to be praised.

**Raising levels of community engagement** had been achieved in the sense that a community of 30 UKLOCKSS libraries had been established and awareness within this group raised through workshops and presentations. While there was now greater awareness of e-journal archiving in the HE library community, it was uncertain how much of this was due to LOCKSS and how much to other archiving solutions and community initiatives or to general pressure on libraries within the period of the project to release space by moving to e-only.

**A self-sustaining UK alliance** had not yet been set up, although good first steps have been made and the UK LOCKSS Technical Support Service had provided a good central service, providing a model which had been of interest to other members of the LOCKSS Alliance. To become self-supporting at the end of the pilot phase at least 30 members would be needed, paying fees based on JISC bands. There was an interest from other HE libraries in joining LOCKSS, but requests for more details on what was involved.

The report makes a number of recommendations for the ongoing development and sustainability of the UKLOCKSS Alliance, including urgent resolution of issues identified by the evaluation in relation both to technical aspects and to the building of content. There is a need to respond to the growing interest in the HE library community in e-journal archiving solutions as a necessary prerequisite of a move towards an e-only environment. Libraries can help make publishers aware of this, and JISC should include in the model licence for NESLi2 deals a requirement that publishers are registered with at least one of a list of recommended e-journal archiving services, including LOCKSS.

Urgent attention should be given to promoting UK LOCKSS actively to potential new members who may wish to join at the end of the pilot phase. Efforts to disseminate information should continue over the coming year, in order to raise awareness of LOCKSS among libraries and publishers. Continued effort should be made to encourage active participation by UK LOCKSS members over the next year.

Consideration should be given as to how UK LOCKSS will be managed at the end of the pilot phase. The next year will be crucial to the ongoing success of the UK LOCKSS Alliance and every effort should be made to address issues made by pilot members, to set up an appropriate management structure and to market the service to potential new members.

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## 1. Introduction

This report provides an evaluation of the UK LOCKSS pilot as it reaches its conclusion. The evaluation was commissioned by JISC and undertaken by Evidence Base Research and Evaluation Services at Birmingham City University. The work was conducted by Pete Dalton, Director of Evidence Base and Dr Angela Conyers, Senior Research Fellow at Evidence Base. The findings of this evaluation will contribute to informing the future progress of LOCKSS in the UK.

The evaluation was conducted between March and May 2008. The evaluation sought to elicit the views of multiple stakeholders in the initiative as well as analyse documentary sources.

Capturing the successes, challenges and lessons learned for the UK LOCKSS pilot will be important to contribute to informing the future progress of LOCKSS in the UK beyond the pilot period.

## 2. Context

### 2.1 LOCKSS

LOCKSS (Lots of Copies Keep Stuff Safe) is described as:

*an international non-profit community initiative that provides tools and support so libraries can easily and cost-effectively preserve today's web-published materials for tomorrow's readers<sup>1</sup>*

LOCKSS originated 10 years ago in the US and was initially developed through support from the Mellon Foundation, the National Science Foundation, and others. Since 2005, LOCKSS has been governed through the LOCKSS Alliance which is a library membership organisation governed by a Board of Directors, and staffed by project team members. The focal point for LOCKSS is the LOCKSS team at Stanford University who provide an initial point of contact and lead on development, coordination and support. Now LOCKSS is primarily funded by contributions from the member libraries of the LOCKSS Alliance and operates as a self-funding fee-based member organisation based at Stanford University. Its' fees support both ongoing development and monitoring of the LOCKSS boxes, including a central technical support service. There are over 170 libraries involved in LOCKSS representing coverage from around the world<sup>2</sup>.

As a solution to electronic archiving, LOCKSS is described as:

*open source software that provides librarians with an easy and inexpensive way to collect, store, preserve, and provide access to their own, local copy of authorized content. Running on standard desktop hardware and requiring almost no technical administration, LOCKSS converts a personal computer into a digital preservation appliance, creating low-cost, persistent, accessible copies of web based content as it is published. Accuracy and completeness of LOCKSS appliances is assured through a robust and secure, peer-to-peer polling and reputation system<sup>3</sup>.*

Unlike some of the other current e-journal archiving solutions, the LOCKSS model aims to parallel the situation with printed journals where libraries have control over their acquisitions and holdings and can take the responsibility for providing ongoing access to their own users for content they have received regardless of whether a subscription has ceased. The LOCKSS website states:

*The LOCKSS model restores the ability to build local collections of electronic journals. The system allows librarians at each institution to take custody of and preserve access to the e-journals to which they subscribe, restoring the purchase model with which librarians are familiar. Using their own computers and network connections, librarians can obtain, preserve and provide access to a purchased copy of an e-journal. This is analogous to libraries' use of their own buildings, shelves and staff, to obtain, preserve and provide access to paper journals<sup>4</sup>.*

The emphasis of LOCKSS is that it is open source, low cost and low maintenance. It is community based and gives libraries control over their own content for preservation rather than relying on a third party provider.

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<sup>1</sup> <http://www.lockss.org/lockss/Home>

<sup>2</sup> <http://www.lockss.org/lockss/Libraries>

<sup>3</sup> [http://www.lockss.org/lockss/About\\_LOCKSS](http://www.lockss.org/lockss/About_LOCKSS)

<sup>4</sup> [http://www.lockss.org/lockss/For\\_Librarians](http://www.lockss.org/lockss/For_Librarians)

The open source LOCKSS software lets libraries house a dedicated LOCKSS box, allowing them to develop local collections of journal content. The LOCKSS box performs four key functions:

- *It collects newly published content from the target e-journals using a web crawler similar to those used by search engines.*
- *It continually compares the content it has collected with the same content collected by other LOCKSS Boxes, and repairs any differences.*
- *It acts as a web proxy or cache, providing browsers in the library's community with access to the publisher's content or the preserved content as appropriate.*
- *It provides a web-based administrative interface that allows the library staff to target new journals for preservation, monitor the state of the journals being preserved, and control access to the preserved journals<sup>5</sup>.*

LOCKSS plays a role in providing continuing and perpetual access to e-journal content that a library has received, for example, on cancelling a subscription or in the event of material not being accessible from a publishers' website due to merger, bankruptcy, subscription network traffic, etc. In addition, through use of a distributed network of LOCKSS boxes, LOCKSS aims to provide sufficient duplication of e-journal content to mitigate against a variety of different threats, from hardware and software failures, disasters and external attacks, to economic and organisational failure<sup>6</sup> that may affect a single, or a few, LOCKSS institutions.

Publishers do not have to pay to join LOCKSS. Publishers are encouraged to add a phrasing to their licence agreement with libraries to enable libraries to preserve content in the LOCKSS system. The LOCKSS website provides the following suggested licence wording:

*Publisher acknowledges that Licensee participates in the LOCKSS system for archiving digitized publications. Licensee may perpetually use the LOCKSS system to archive and restore the Licensed Materials, so long as Licensee's use is otherwise consistent with this Agreement. Publisher further acknowledges and agrees that, for the purpose of repairing damage to or loss of another LOCKSS system's copy of Licensed Materials, Licensee's LOCKSS system may make Licensed Materials available to that other LOCKSS system provided that the other LOCKSS system had previously proven to Licensee's system that it had the same Licensed Materials<sup>7</sup>*

Publishers are required to set up a 'manifest page' which allows the LOCKSS software to crawl the publishers' website and identify appropriate material for archiving. The manifest page provides only the relevant permissions for archiving the material that a publisher has agreed to provide to LOCKSS. The LOCKSS crawler collects content delimited by what is termed 'Archival Units'. These tend to consist of a full year of content from a particular publication or a complete journal volume. Once permission for an archival unit has been granted by a publisher, it can be collected by all institutions which have authorised access to it. The LOCKSS system:

*preserves the original state of the content, right down to publisher branding. With LOCKSS, the content is preserved at its original URL -- exactly as it looks on the publisher's site today<sup>8</sup>.*

It therefore harvests the presentation files of publishers content.

The volume of content available through LOCKSS has continually grown and updates are made regularly. The LOCKSS website currently list 237 publishers and 971 publications included in

<sup>5</sup> [http://www.lockss.org/lockss/How\\_It\\_Works](http://www.lockss.org/lockss/How_It_Works)

<sup>6</sup> <http://www.dlib.org/dlib/november05/rosenthal/11rosenthal.html>

<sup>7</sup> [http://www.lockss.org/lockss/For\\_Publishers](http://www.lockss.org/lockss/For_Publishers)

<sup>8</sup> [http://www.lockss.org/lockss/For\\_Publishers](http://www.lockss.org/lockss/For_Publishers)



LOCKSS<sup>9</sup>. Many of these publishers are those who provide content through the Stanford University based High Wire Press (95 publishers), through Project Muse (71 publishers) or BioOne (71 publishers). The LOCKSS web site lists processed titles. It is important to note for purposes of comparison that while not all titles from these publishers and not all volumes of a particular title are yet available for preservation by libraries, most publisher who are working with LOCKSS have committed all their titles for preservation, and many have agreed to preserve all volumes available via the web. Also included are 59 open access titles.

Although LOCKSS has been most commonly used to preserve subscribed e-journal content it can be used to preserve open access e-journals, and ebooks. The LOCKSS software can also be applied more widely to preserve other electronic content for example institutional repositories, websites and blogs.

## 2.2. The UK LOCKSS pilot

The Joint Information Systems Committee (JISC) in partnership with the Consortium of Research Libraries in the British Isles (CURL) funded the Collective UK LOCKSS Alliance membership for 24 selected UK HE libraries. Six further libraries have joined as associate members and took part in the pilot. The Digital Curation Centre (DCC) at the department of HATII within the University of Glasgow was funded to provide technical advice, software development and training and set up the LOCKSS Technical Support Service<sup>10</sup>. Content Complete Ltd, JISC's negotiation agent for the NESLi2 national e-journals initiative<sup>11</sup>, was funded to negotiate with NESLi2 publishers to allow LOCKSS-based archiving. The pilot project started in March 2006 for a two year period. The end of the project was later extended until July 2008.

The UK LOCKSS Pilot Programme was set up to deliver the following benefits to the UK academic community:

- *To raise awareness of the LOCKSS initiative;*
- *To seed a self-sustaining base of LOCKSS users in the UK by providing the libraries with the practical help to get started and develop the skills needed to run their LOCKSS nodes beyond the Pilot;*
- *To collectively preserve a major proportion of the e-journals in common use in the JISC community;*
- *To build a centre of expertise outside of the US and benefit the international LOCKSS community.*

The participants in the UK LOCKSS Pilot have access to appropriate content gathered through the LOCKSS Alliance. In addition, it was hoped to focus on NESLi2 publishers of relevance to UK libraries to add further content during the pilot. Further details about the UK LOCKSS Pilot can be found on the JISC website.<sup>12</sup> LOCKSS is one of a few emerging e-journal archiving solutions of relevance to UK libraries.<sup>13</sup> An overview of how LOCKSS compares to other e-journal archiving solutions has been commissioned alongside this evaluation study<sup>14</sup>.

<sup>9</sup> [http://www.lockss.org/lockss/Publishers\\_and\\_Titles](http://www.lockss.org/lockss/Publishers_and_Titles)

<sup>10</sup> <http://www.dcc.ac.uk/lockss/>

<sup>11</sup> <http://www.nesli2.ac.uk/>

<sup>12</sup> [http://www.jisc.ac.uk/whatwedo/programmes/programme\\_preservation/programme\\_lockss.aspx](http://www.jisc.ac.uk/whatwedo/programmes/programme_preservation/programme_lockss.aspx)

<sup>13</sup> <http://www.jisc.ac.uk/media/documents/programmes/preservation/ejournalsfinal.pdf>

<sup>14</sup> Morrow, T. et al. (2008) A Comparative Study of e-Journal Archiving Solutions: A JISC Funded Investigation

## 2.3 Evaluation of the UK LOCKSS pilot.

As the UK LOCKSS Pilot was nearing its end, JISC commissioned Evidence Base, Research and Evaluation Services at Birmingham City University to conduct an evaluation of the pilot.

The aims of the evaluation of the LOCKSS Pilot Programme were to evaluate how successful the Pilot Programme had been in achieving the original aims and objectives, which were:

- To implement an effective technical support service for the participating institutions of the UK LOCKSS Alliance;
- To build a substantial collection of e-journals to which the participating institutions have archival rights;
- To negotiate with the NESLi2 publishers for compliance with the LOCKSS programme;
- To raise levels of community engagement with the LOCKSS initiative;
- To seed a self-sustaining UK alliance that will enable institutions to commit to the use of LOCKSS as an e-journal archiving solution following the end of the Pilot Programme.

The evaluation was conducted between March and May 2008. The evaluation sought to elicit the views of multiple stakeholders in the initiative as well as analyse documentary sources. The approach to the evaluation was developed in consultation with Neil Grindley, JISC Programme Manager. Data for the evaluation was collected using a mixture of methods:

- An email survey was sent to all participating institutions to gather their feedback on a variety of issues. 30 surveys were sent out and 23 were returned. A copy of the survey questions can be found in Appendix 1.
- An email survey was devised and sent to the HE library directors' mailing list, LIS-SCONUL, to get feedback on LOCKSS from a selection of non pilot libraries. Replies were received from 22 libraries. A copy of the survey questions can be found in Appendix 2.
- A request to take part in a telephone interview was sent to 16 publishers who had been contacted by the JISC negotiating agent or the LOCKSS technical support team as part of the pilot. Replies were received from 6 publishers, of whom two agreed to take part in a telephone interview.
- Face to face or telephone interviews were conducted with ten key stakeholders in the pilot.
- Documents relating to the UK LOCKSS pilot programme were analysed. This included project reports, records of discussions on the LOCKSS mailing list, feedback collated from training sessions and LOCKSS documents.

Capturing the successes, challenges and lessons learned for the UK LOCKSS pilot will be important to contribute to informing the future progress of LOCKSS in the UK beyond the pilot period. The report presents its findings against each of the five evaluation themes identified above.

### 3. Technical support service

***To implement an effective technical support service for the participating institutions of the UK LOCKSS Alliance;***

#### 3.1. Overview

The pilot has provided a valuable opportunity to establish and test a UK based technical support service for UK LOCKSS. In establishing the UK LOCKSS Pilot, it was considered important to create a UK based technical support service for the following main reasons:

- to develop the necessary skills and expertise in the UK
- to address technical and collection development issues that were specific to the UK.

Libraries participating in the UK LOCKSS pilot are supported by a UK LOCKSS Technical Support Service (LTSS) based at the Digital Curation Centre (DCC) at the department of HATII at Glasgow University. A LOCKSS Technical Support Officer (LTSSO), Adam Rusbridge, was appointed at the beginning of the pilot to provide technical and related support to members of the UK LOCKSS Pilot. Professor Seamus Ross, Director of HATII, contributed to the management of the LTSS and the strategic direction of UKLOCKSS as a whole. The LTSS has been responsible for the purchase of hardware, development of publisher-specific plug-ins and first line technical support, as well as training and awareness-raising. The LTSS provides a helpdesk for pilot members, referring queries to the Stanford LOCKSS team where appropriate.

The DCC is represented on the LOCKSS Alliance Board and there is also representation on the LOCKSS Alliance Technical Policy Committee. At strategic level, therefore, the UK LOCKSS Alliance has achieved effective integration with the LOCKSS Alliance itself. On a day to day basis there is regular communication between the LTSS and the LOCKSS Technical team at Stanford University and Adam Rusbridge is listed on the LOCKSS website as a member of the LOCKSS team<sup>15</sup>. Through working closely with the Stanford LOCKSS technical team, the LOCKSS Technical Support Officer has been able to acquire the skills and knowledge necessary to provide day to day technical support for the UK LOCKSS participants. Where problems arise that the LTSSO cannot respond to personally, support can be obtained from the US LOCKSS Technical Team.

The technical support provided by the LTSS was singled out by many pilot members as an aspect that had worked well and met their expectations. In ongoing progress reports, the technical support service for the pilot was found by most to be effective. This was confirmed by the survey of pilot members, where eighteen respondents (78%) reported the technical support to be 'successful' or 'very successful':

*The LOCKSS Technical Support Service has been very responsive and effective*

Two pilot institutions however, had found phone support slow or poor during holiday periods and two others expressed concern at the perceived heavy workload for the LTSSO:

*We have had some concern about the heavy workload for the UK support site where expertise sits mostly with one member of staff*

For most participating institutions, the performance of the LOCKSS box had been trouble-free, upgrading the software and running the server were straightforward and the process was not time-consuming. In summarizing the July 2007 pilot progress reports, the LOCKSS Technical Support Officer reported that most institutions who estimated the actual time spent had in total spent the equivalent of one week or less on LOCKSS related work in the previous six months.

<sup>15</sup> [http://www.lockss.org/lockss/About\\_LOCKSS](http://www.lockss.org/lockss/About_LOCKSS)

The survey of pilot members carried out for this evaluation found that 14 of 23 respondents (61%) had not experienced technical problems, or none that were not satisfactorily and speedily resolved by the LTSS.

A few cases of local difficulties had been experienced. Two sites had had technical difficulties, one due to firewall problems within the institution, and a further three reported problems with the installation of a new hard disk .

In looking at technical support, 6 survey respondents felt that should be improvements in the documentation and user manuals, particularly as library rather than IT staff were responsible for operating the LOCKSS box:

*Their supporting documentation has not always taken account of the fact that many of the representatives from the institutions are library staff rather than IT staff'*

This issue was also raised in the progress reports and is currently being addressed by the LTSSO.

In evaluating the success of the UK LOCKSS pilot it is important to consider the wider technical aspects in addition to the technical support element.

The following technical challenges were identified:

### **3.2 Providing content to users**

Much of the technical activities during the pilot have centred around setting up each LOCKSS box and establishing the workflow to receive and archive relevant archival units. However, only one of the pilot sites (Glasgow) has so far integrated LOCKSS with the proxy server. All other UK participants are currently not at a stage where they can serve content to users should the circumstance arise. This is a major concern to most of the UK LOCKSS pilot participants.

The LOCKSS system has been designed to integrate with the institutional proxy, which is an institutional service where commonly requested webpages are locally cached to minimise bandwidth costs. . Requests for content held in LOCKSS can then be routed through the LOCKSS box if the publisher's site is not available. The proxy route works well in the US, where the use of proxy servers such as EZProxy is common. In the UK, not all institutions use a proxy cache and it has proved difficult for those who do to integrate it with the LOCKSS box during this pilot phase. Whereas library staff were responsible for setting up the LOCKSS box, integrating it with the proxy server was the responsibility of computing staff and there may have been a reluctance to undertake the necessary work for the limited period of the pilot project. The pilot members themselves may also not have seen this as a priority, given that there were few examples where LOCKSS content was actually needed and so few libraries had actually implemented it.

While some pilot members still hoped to see integration with proxy servers taking place in the future, over the course of the pilot there emerged a strong demand for an alternative solution to suit the needs of UK Libraries through integration of content with library management systems by closer co-operation with link resolvers such as SFX. Clearly resolving this issue and making content easily available to users is a vital factor in the effectiveness of LOCKSS. This issue has been raised with the US Technical Team who are currently engaged in moving a prototype solution, shown to UKLOCKSS in late 2007, to a production level implementation. Work is ongoing now and is scheduled to be complete end of Summer 2008.

All participants are look forward to this being resolved soon as for some it will be a factor in deciding whether to continue with LOCKSS.

The differing use of proxy servers and the greater interest in link resolvers from the UK HE

community provides an example of where differences between practices in the US and the UK have needed to be addressed specifically and where a strong central voice has helped bring this matter to the attention of the US LOCKSS team. In the light of current technical developments such as Athens/Shibboleth, it remains important for the UK voice to be heard.

### 3.3. Testing the system

The LOCKSS content is owned by the library and library staff can audit the content via a web browser to confirm it is correct and complete. However, without the desired mechanism by which access can be provided to users, UK LOCKSS members have not widely tested and assessed access to content in a production environment.

While access does work via a proxy, as has been demonstrated at the University of Glasgow, the fact that other institutions have not yet been able to implement this solution in the way it was designed means that access has not been fully tested. The link resolver route is the preferred choice for UK pilot institutions. :

*we haven't yet seen in a real-life scenario how LOCKSS would work with our link resolver (SFX) in order to deliver content to an end-user, if we lost access to material on a publisher site.*

One pilot member expressed concern about whether the technology could cope:

*LOCKSS only requires flimsy equipment to harvest/poll, but we wonder whether following a 'trigger event', the base technology would be able to cope with demand. Either way, there is clearly a local resource requirement associated with arranging local serving of content<sup>16</sup>.*

The fact that a number of libraries within the LOCKSS Alliance hold the same content should in itself provide some safeguard, though the current lack of a suitable and desirable access route for users clearly gives rise to concern.

### 3.4 Use of e-journal aggregators

Where libraries obtain journal content through an aggregator service such as the EBSCO databases rather than by subscription to the journal or journal package, titles included in the aggregator services will not generally be available to them in LOCKSS or other e-archiving services due to licence restrictions with publishers. A few survey respondents raised this as a technical limitation of LOCKSS in the evaluation survey. This issue had also been raised in the ongoing progress reports, but was not seen as a major issue, libraries recognising that they would need to subscribe directly to the publishers package to get access through LOCKSS. For non-research libraries in particular, who may place greater reliance on use of aggregators, it is important for publicity to make clear that these are not included.

### 3.5 Improvements to interface

In progress reports and at workshops, there has been demand for improvements to the interface. Eleven pilot survey respondents raised this as an issue:

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<sup>16</sup> Experience led by James Currall at the University of Glasgow, where LOCKSS is integrated with the Squid-based institutional proxy, has validated the LOCKSS team's prediction based on an earlier study of US usage patterns that the LOCKSS technology would capably sustain the load of proxying in the UK context.

*If the LOCKSS interface was more user-friendly and easy to maintain for non-technical staff, this would be an incentive to stay in the alliance. For example, it would be helpful if it was easier to see what Archival Units are available, and track which are subscribed and non-subscribed titles, what units we have selected for preservation and which of these units have been successfully crawled.*

Requested interface changes require the redevelopment of the underlying data model, and the US LOCKSS team is implementing needed changes now. This is another example of the UK LOCKSS' project impact on technical development.

### 3.6 The publishers' perspective

The LOCKSS system uses a web crawler to fetch content from the publisher's web site. A 'publisher manifest' is needed for each 'archival unit' to give permission for the web crawler to collect and preserve the content for those libraries that have subscription access to the title.

As will be shown when looking at content (Section 4), the number of publishers who have agreed to take part in the UK LOCKSS pilot has been limited, and negotiations have been protracted. Publishers' experience of using the UK LOCKSS Technical Support Service is therefore limited and only two agreed to be interviewed for this evaluation. Their comments on the technical support received are given below.

#### Royal Society of Chemistry

The Royal Society of Chemistry (RSC) had agreed to take part in the pilot in November 2006, but content was only released on LOCKSS in April 2008. In an interview with the Publishing Services Manager, it was explained that although the manifest pages had been there for some time, getting them to work had taken a long time, mainly due to an issue with the crawler picking up on the article level after changes in the server infrastructure.

Although it was acknowledged that the time lapse had mainly been due to scheduling on their side and that feedback from LOCKSS had been helpful, problems had arisen when it came to the top of the pile to get done and response was not then instantly available. Having dealt originally with UK LOCKSS, work was finalized with Stanford.

#### InformaWorld (publishers of Taylor & Francis titles)

Taylor & Francis had agreed to take part in August 2006 and were keen on the principle of LOCKSS. They are listed as 'in process' on the LOCKSS website and now anticipate making content available by the end of 2008. After a conference call involving both UK and US LOCKSS, good progress has now been made on understanding the technology, but nothing has yet been implemented. There was a feeling that LOCKSS was slightly 'mis-sold' as a system that was simple for publishers, as it was difficult for InformaWorld to implement manifest pages to reflect the rolling nature of current and cancelled subscriptions.

While from this limited feedback, delays have not mainly been caused by technical problems but rather by publishers' conflicting priorities, in both cases there were technical issues to be addressed the details of which reflect the differences among publishers hosting systems. There may be a case for examining the way technical help is provided to publishers and the stage at which technical issues are passed to the central LOCKSS technical support. As some publishers may already have been in separate discussions with LOCKSS in the US, it is important to clarify the respective roles of the UK and US technical support services in this regard.

### 3.7 Summary and considerations

The pilot has been successful in implementing an effective technical support service. It has provided:

*'a functioning network where the technology is demystified'* (survey respondent)

During the pilot, the UK LOCKSS Technical Support Service has generally worked well and has developed good working links with the LOCKSS Technical Team at Stanford. This has enabled the development of technical expertise in the UK. This will provide a firm basis for technical support on which future UK LOCKSS activity can be built. Issues raised through progress reports or at meetings have been addressed as far as possible, either by the UK LOCKSS Technical Support Service or have been referred to the LOCKSS Alliance Technical Support Team. As a result the UK LOCKSS Technical Support Service has generally provided a valuable interface between the UK LOCKSS libraries and the LOCKSS Alliance Technical Support Team. Those who have had to call on technical support have usually found it helpful, and the number of problems appears small considering the fact that the concept was new to pilot members and to the UK LOCKSS Technical Support Service at the start of the project. Some support issues such as improvements to documentation are currently being worked on by the UK LOCKSS Technical Support Service

Few pilot members have reported problems with the technology, which they have found simple to operate and not time-consuming. However, with one exception, libraries are still not in a position to serve content to their users should the need arise, as links to proxy servers have not been made. The desire to find an alternative approach to serving content to users in the UK through link resolvers has highlighted the value of a UK based network and its ability to bring common UK technical issues to the attention of the LOCKSS Alliance Technical Support Team. It is clear that the LOCKSS Alliance Technical Support Team are taking the technical issues raised by the UK LOCKSS pilot seriously and are seeking to provide solutions and improvements.

The following issues have emerged which will need to be considered in relation to the continuation of UK LOCKSS after the pilot phase:

- **Minimising the risk to UK based technical support**

Developing technical support in the UK is valuable and maintaining a central focus helps ensure that UK views are well represented in the LOCKSS Alliance. There is however a risk in placing great reliance on one person to provide the technical expertise needed to support LOCKSS in the UK. In accord with the ethos of the LOCKSS boxes distributing content amongst boxes in the network to reduce risk of loss of content, consideration should be given to distributing some of the technical expertise more widely throughout the UK LOCKSS network to mitigate against staff absence or loss. This is a model of distributed technical expertise that has been taken in the US LOCKSS Private LOCKSS Networks. In addition, if more libraries and more publishers join UK LOCKSS it is questionable whether the workload will be too much for one person. UK LOCKSS should investigate ways in which some of the technical expertise can be more distributed amongst the LOCKSS network to reduce the risk of losing the expertise. This may involve more contribution from UK LOCKSS members. In the evaluation survey four of the current pilot members have stated that they would be willing to contribute to the LOCKSS network with developing plug ins and technical support. Provision of formal training for such members may need to be considered.

- **Serving content to users**

For LOCKSS to work effectively in the UK, libraries need to be assured that they can serve content to users when they need it and that the LOCKSS system is compatible with

UK library systems and practices. Developing and rolling out the means to serve content to users through link resolvers is of utmost importance to UK LOCKSS libraries and for many it will be an important consideration in whether they continue with LOCKSS. The LOCKSS Alliance Technical Support Team is currently working on a means of allowing access through link resolvers. It will be important that prior to current pilot participants making a decision on whether to continue in LOCKSS and new libraries deciding whether to join, that the LOCKSS Alliance Technical Support Team has implemented the solution. The LOCKSS implementation and release schedule indicates content for publishers hosted on major platforms and preserved in a LOCKSS box will be accessible to readers when the publisher is not available via a link resolver in Summer 2008.

- **Aggregators**

Libraries need to be made aware of the potential limitations and issues surrounding content provided through aggregator services in LOCKSS as in other e-journal archiving approaches.

- **Improving the interface and documentation**

Improvements to the interface and to documentation were regarded as important areas by pilot members. Attention needs to be given to ensuring that the interface is user-friendly and gives necessary information in an accessible way, and that documentation can be understood by non-experts. Discussions here are ongoing and it is an area where pilot members can themselves continue to be involved in making suggestions for improvement.

- **Technical support to publishers**

The service provided to publishers in the UK has been tested but there have been challenges with the process and few publishers have as yet made content available. During this time, the UK LOCKSS Technical Support Service has gained valuable experience. With so much delay in implementation through other factors, it is important to keep the technical aspect as straightforward as possible.

Many publishers operate on an international basis, and may well have already been approached by the US support team as a result of interest from US members of the Alliance. It is important to continue the close liaison that has been built up between the UK and US support teams in order to minimize work on negotiations with publishers.



## 4. Building a substantial collection of e-journals

***To build a substantial collection of e-journals to which the participating institutions have archival rights;***

### 4.1 Overview

In becoming members of the LOCKSS Alliance, UK pilot members acquired access to all content available in LOCKSS to which they were entitled. As at the end of 2007, over 230 academic publishers were taking part. This included major publishers of interest to the UK academic community such as OUP, BMJ, Project Muse and Highwire Press. The titles listed on the LOCKSS web site represents only those titles processed and available for the libraries to collect and preserve. As a result content can be made available on a volume by volume basis. It is not a complete list of all titles committed to LOCKSS, most participating publishers have committed all their titles for preservation and many of them have committed all volumes available via the web. In response to the UK LOCKSS community, titles in process, as well as processed, will be posted on the LOCKSS web site.

When the UK LOCKSS pilot was initiated it was envisaged that:

*The negotiation will in the first instance focus on NESLi2 2005 and 2006 publishers who have not yet agreed to make content available for collection and preservation by LOCKSS. Negotiation with non-NESLi2 publishers will take place after they have been identified and agreed on by the participating libraries<sup>17</sup>.*

Content Complete Ltd the JISC NESLi2 Negotiating Agent was commissioned to undertake the negotiations with publishers during the pilot. An aim of including a negotiating agent was to be able to add value to the UK LOCKSS pilot by negotiating the addition of content to LOCKSS that would be of particular interest to UK institutions. At the start of the project, the following five NESLi2 publishers were already in LOCKSS providing access to some of their titles:

- Project Muse
- Oxford University Press
- SAGE
- BMJ Publishing Group
- Institute of Physics Publishing

In August 2006 Content Complete Ltd (CCL) were asked to negotiate with the following 12 NESLi2 publishers about possible participation in the UK LOCKSS pilot:

- American Chemical Society
- Annual Reviews
- Blackwell
- British Psychological Society
- Cambridge University Press
- Elsevier
- Nature
- Royal Society of Chemistry
- Science
- Springer
- Taylor & Francis
- Wiley

<sup>17</sup>

[http://www.jisc.ac.uk/whatwedo/programmes/programme\\_preservation/programme\\_lockss.aspx](http://www.jisc.ac.uk/whatwedo/programmes/programme_preservation/programme_lockss.aspx)

The following summarises the degree of engagement with LOCKSS at the time of the evaluation:

- 2 (Annual Reviews and Royal Society of Chemistry) put content on LOCKSS in 2008
- 3 are listed on the LOCKSS website as 'in process'
- 1 will have content 'at some stage'
- 5 (Blackwell, Elsevier, Springer, Wiley and Science) have said no
- 1 remains undecided.

CCL were also asked by JISC to negotiate with a further 9 publishers following an email survey of pilot libraries with a request to identify non-NESLi2 titles which they would like to see included in LOCKSS. A total of 107 publishers were listed by libraries, from which those with the most recommendations were selected. The following publishers were selected:

- American Institute of Physics
- American Psychological Association
- Biomed Central
- Emerald
- IEEE
- Lippincott, Williams & Wilkins
- MIT Press
- Palgrave Macmillan
- University of Chicago Press

At the time of this evaluation (April 2008), the situation with the additional group of publishers was:

- 1 (Biomed Central) had content on LOCKSS, after direct contact with Stanford
- 1 is listed on the LOCKSS website as 'in process'
- 1 is 'coming soon'
- 3 are 'still considering'
- 2 (American Institute of Physics, and IEEE) have said no.

Clearly negotiation can be a lengthy process from the initial approach to getting a final decision and even then when agreement is obtained it may take longer to get content released. Some publishers approached at the beginning of the UK LOCKSS pilot are still yet to make a decision on whether to provide content to LOCKSS.

## 4.2 Reasons given for publishers not taking part

Either through responses to CCL or in response to requests for interview as part of the evaluation some publishers provided reasons for not taking part in LOCKSS. Most publishers were taking part in other e-journal archive initiatives, such as CLOCKSS and Portico.

One email respondent was concerned over the governance of LOCKSS, though it was not possible to explore this comment further. Other issues raised by publishers were:

- concern over perceived issues of security of LOCKSS.
- disagreement with allowing access where library ends its subscription
- questions about whether LOCKSS is able to preserve dynamic, constantly changing websites

As well as concerns over the security of LOCKSS and its suitability as a platform, it was apparent that some major publishers were reviewing the emerging range of e-journal archiving solutions available and concluding that others such as Portico and CLOCKSS might better meet their

needs. The emergence of alternative archiving solutions is likely to have had an impact on getting more NESLi2 publishers involved in LOCKSS. Some may have been unwilling to take part in a pilot project, even though access could have been restricted to UK members.

Although publishers were aware of the importance of e-journal archiving and had explored the various options, there was a feeling from libraries that publishers were not always aware of LOCKSS and in particular were looking for the extent of demand from the library community to a service such as this.

### 4.3 Reasons for delays

Long delays meant that up until the beginning of 2008 no content had been delivered as a result of the UK LOCKSS Alliance, though during that period Biomed Central had made content available through direct contact with Stanford and other content was being regularly added, though not all necessarily of interest to the UK community. Reports from CCL indicate a continued picture of publishers 'still undecided' or 'actively considering'. The major reason, as with the two publishers interviewed for this evaluation, is likely to be failure to see this as a priority, though specific reasons cited by some publishers indicated that the process itself was not always straightforward. Two publishers referred to how the online technology required necessitated a redesign and rebuild of the web site, which has taken some time.

It was apparent also in the interview with InformaWorld that lack of apparent demand was a major factor in delays in implementation; if there was seen to be a potential demand they would use this as an opportunity to market their membership of LOCKSS to the library community.

Another publisher cited delays due to having to rely on a third party hosting company. If hosting companies used by small and medium publishers such as Ingenta, and Metapress were to make their services LOCKSS compatible as have HighWire, Atypon, Project Muse, BioOne, and BioMedCentral this would save an additional delay.

### 4.4. Content limitations

The failure to secure content from three major NESLi2 publishers (Blackwell, Elsevier and Wiley) has been a great disappointment to pilot members, as this survey respondent pointed out:

*We only subscribe to three Nesli2 deals as an institution, and the two largest of these (ScienceDirect and Blackwell) are not participating in LOCKSS*

Lack of scholarly content and the limited number of publishers who have made content available through the efforts of the UK LOCKSS Pilot were the primary reasons for the pilot not having wholly met the expectations of members. Increased content was the most requested improvement for the next year of UK LOCKSS.

### 4.5 How much content is available?

CCL estimated in November 2007 that of approximately 6,800 e-journals available to NESLi2 institutions, around 2,000 titles (29.5%) will be available in LOCKSS once all the promised content is released. Pilot members specifically highlighted access to Project Muse and also to Highwire Press titles as benefits of being part of the LOCKSS Alliance, and Taylor and Francis titles, which hopefully will be added at some stage, were also mentioned.

It was difficult to get from libraries an accurate picture of the amount of content they had in the LOCKSS box. The LOCKSS system attempts to collect all content, although the user interface status messages get filled with warnings for the content to which the institution does not have access and thus cannot collect. The specific number of archival units quoted in the progress reports varied greatly, according to whether libraries had set their machines to collect all material

and ignore warnings for the content to which the institution did not have access and thus could not collect, or had cross matched content to which they were entitled. Similarly, in response to a question in the survey on the proportion of their total e-journal collection that was covered by any e-journal preservation service, 13 respondents (56%) were unable to give a figure, while 6 (26%) quoted a low figure of 5-10%. Some gave higher figures, up to 95% of journals, though it was unclear whether these respondents were also including services such as JStor or looking at journals for which an archive clause formed part of the licence agreement. Even though they were unable to quote figures, several respondents stressed the importance of being sure there was archival access of some sort before they moved from print to e-only.

#### 4.6. Varied availability of volumes

A further problem identified with LOCKSS by some pilot institutions is that it was not considered easy enough to discern which volumes of a title publishers made available. Until this was known some institutions considered that this made it more difficult to release shelf space by going e-only when all volumes were not available.

Requests for 'more complete runs' were part of the demand for content improvement in the coming year. Comments from pilot progress reports indicate that this issue is recognized, that CCL are negotiating for back content wherever possible. Some publishers wish to start in a small way, particularly since the last two years were a pilot program. This indicates that negotiation with publishers may not be a 'once for all' process and may need to be re-visited at regular intervals to increase the amount of content.

#### 4.7 Small and medium publishers

In spite of continued requests from participating libraries for 'killer' content of core titles, high use titles, more STM titles, more major publishers, there was also a recognition that major publishers were unlikely to join LOCKSS now that other solutions were available. It was also more recognised that the content from the major publishers was in fact less likely to be at risk than that from smaller publishers, because of their greater economic stability and stronger platform development. Small and medium publishers, and open access publishers, were seen as a more likely source of content by many of the UK LOCKSS participants:

*if LOCKSS were in future to find a niche, e.g. preserving OA titles or low circulation university press reviews, then of course we would evaluate the cost and the benefits and decide whether to join on that basis*

A few respondents had already found the inclusion of certain smaller publishers in LOCKSS useful. The NESLi2 SMP (Small to Medium Publishers)<sup>18</sup> initiative may provide opportunities for LOCKSS negotiations in the future.

The shift from focus on the larger NESLi2 publishers demonstrates a flexibility of approach by UK LOCKSS. When existing UK LOCKSS participants were asked in the evaluation survey 'what do you perceive as the most critically important content to put into UK LOCKSS?' most responses reflected a change in expectations about the types of content that would be added and also about the value of LOCKSS as an archiving system:

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<sup>18</sup> <http://www.nesli2.ac.uk/smp-information.html>

*Ideally we would like all our major heavily used titles to be archived with guaranteed perpetual access. Realistically however, we can see the potential of LOCKSS for SMP journals which can be difficult to deal with. We may also be interested in archiving non e-journal material and institutional repository material*

*Large numbers of small and medium publishers*

*Content from small and medium publishers who are not currently involved with a preservation service*

#### 4.8 Open Access titles

LOCKSS includes open access titles, several acquired through the LOCKSS Humanities project<sup>19</sup> in which US university participants selected open access humanities titles which were seen as 'at risk'. Alongside the UK LOCKSS pilot project, JISC also funded a proposal from the University of Glasgow to negotiate with a number of UK open access publishers with a view to getting their titles included in LOCKSS. This followed a survey of pilot libraries asking them to select titles from a list of 96 UK titles compiled from the Directory of Open Access Journals (DOAJ). The fact that 75% of these titles received at least one vote from pilot libraries is itself an indication of the spread of interest in such titles within the UK HE community. The project OpenLOCKSS<sup>20</sup> ran from March-July 2007, but work is still ongoing. During the project, 28 publishers were contacted, with 32 titles. These were mainly single journals from university departments or small societies.

Discussions with publishers took some time. It was often difficult to track down contacts from web sites and the concept of preservation and of LOCKSS had to be explained. Positive responses were received from 19 (70%), with 4 manifest pages prepared so far and an additional 10 in active discussion. Plug-ins for these are now being written by the UK LOCKSS Technical Support Officer and three OA titles have so far been released through the OpenLOCKSS project. Manifest pages for Open Access titles were less complex than those for commercial publishers, but publishers needed help in understanding what was required. The UK LOCKSS team changed their process to be akin to the more straightforward US process where the publisher is sent a pre-written manifest page containing the statement, "LOCKSS system has permission to collect, preserve, and serve this open access Archival Unit" and simply puts this manifest page at the URL, <http://www.yourhostname/LOCKSS.html>.

The OpenLOCKSS project has generated interest from the OA publishers approached and other publishers have asked to be included. Unlike subscribed titles from commercial publishers, any libraries are allowed to cache these titles, but it is important to ensure there is a demand before entering on negotiations

One potential member of UK LOCKSS was particularly interested in its role in the preservation of OA titles:

*We understand that LOCKSS members can also add free to view titles. This approach will be guided by our collection shape and its priorities, as to how many of these we would want to archive. I know that there are some very problematic OA US learned society journals with PDFs that take 10 minutes to load, which might be useful to preserve as local e-copies, particularly where we have discarded our own subscription paper copies of these titles, owing to space constraints.*

<sup>19</sup> [http://www.lockss.org/lockss/LOCKSS\\_Humanities\\_Project](http://www.lockss.org/lockss/LOCKSS_Humanities_Project)

<sup>20</sup> The project team consisted of Tony Kidd, William Nixon, Laura Roy, and Adam Rusbridge. More information and outputs are available from: <http://www.lib.gla.ac.uk/Research/openlockss/>

The OpenLOCKSS project has demonstrated the potential for adding UK open access titles to LOCKSS and pilot members appreciated the involvement in the survey process. Results have been promising. Negotiations with publishers, however, were protracted as the group learned about the process. Now that project funding is ended, if this initiative is to be maintained a mainstream, simplified mechanism needs to be set up to continue the work. As well as selection of titles and publisher negotiations, the development of plug-ins and technical issues needs to be addressed as adding to the workload of the UK LOCKSS Technical Support Service.

#### 4.9 Use of LOCKSS for other e-archiving

LOCKSS can also be used for the archiving of other electronic resources, such as institutional repository content, webpages, blogs etc. Some pilot members were interested in exploring this aspect further:

*The institutional repository was also a factor at the time, and LOCKSS was considered potentially useful in terms of long term preservation of repository content.*

*Also my view is that the potential for LOCKSS as an institutional asset storage and preservation tool is not recognised or promoted.*

Although this use of LOCKSS was not followed through during the pilot, there may be a case for investigating the wider potential of LOCKSS when promoting the service to potential new members of UK LOCKSS.

#### 4.10 Summary and considerations

The aim of building a substantial collection of e-journals has not been wholly achieved. For a variety of reasons participation in LOCKSS by some of the major NESLI2 publishers has not been forthcoming. Pilot members gave as their main reason for taking part in the UK LOCKSS pilot to ensure long term access to subscribed e-journal content. Failure to provide this has been a significant factor in the fact that over half the members felt that their initial expectations had only partially been met. More content, more publishers, more complete runs were the improvements most requested for the next year of UK LOCKSS. However, if all content promised as part of the negotiating process during the pilot phase is made available, about 30% of NESLI2 titles will be available on LOCKSS, including content already negotiated directly with the LOCKSS Alliance. Some major NESLI2 publishers, for example OUP, Project Muse and Sage, were already in LOCKSS and the addition of Annual Reviews (negotiated only for the UK community), Royal Society of Chemistry and (it is hoped) Taylor and Francis are all welcomed.

Attempts to include a group of non-NESLI2 publishers met with similar results and have as yet not resulted in any content being added, though the involvement of pilot members in the survey of possible publishers and titles was welcomed as an indication of community involvement

Despite the difficulties in securing publisher content through the UK LOCKSS efforts, UK LOCKSS pilot participants are able to benefit from appropriate content that has been negotiated by other LOCKSS Alliance institutions worldwide. Moving forward with LOCKSS, most participants have revised their expectations about what LOCKSS will deliver and prioritise in terms of publisher content and most can see a value in focusing on small to medium publishers.

The following issues have emerged which will need to be considered in relation to the continuation of UK LOCKSS after this pilot phase:

- **NESLi2 publishers**

The initial concentration on NESLi2 publishers perhaps raised the expectations of pilot members that Elsevier and WileyBlackwell, to whose deals most of them subscribed, would be included. It has to be accepted that some major publishers will not join LOCKSS, particularly now that other e-journal archiving solutions are available. When promoting further take up of LOCKSS beyond the pilot period, information must be presented in a way that will make clear the expectations of what LOCKSS will focus on and deliver.

- **Small and medium publishers**

Small and medium publishers are possibly more likely to have content at risk, and to be less interested in joining other e-journal archiving initiatives where payment is involved. Over the course of the pilot UK LOCKSS has paid more attention to acquiring more content from small and medium publishers and this should be continued during the next phase of UK LOCKSS. The opportunities that the JISC SMP NESLi2 initiative might provide should be explored. Attempts to make hosting companies such as Ingenta LOCKSS compatible might also encourage SMPs to join.

- **Open Access publishers**

The line between open access and small publishers is often a fine one, as open access publishers may need to operate a subscription model to fund their journal. The OpenLOCKSS initiative suggests there is the potential to attract more open access content, though this was a time consuming process while the OpenLOCKSS team was exploring and refining the methodology.

- **Use of LOCKSS for other purposes**

Some of the pilot participants expressed an interest in using LOCKSS for preservation of other content such as institutional repositories. This is an additional benefit which might be attractive to potential participants in the future.

- **Time needed for negotiation and technical implementation**

All publisher negotiations during the two year project have been protracted. Discussions begun in 2006 are only now coming to fruition. In light of the length of time taken to negotiate with publishers, and the delays in making content available, it may be too soon to judge to what extent the pilot has been a success in this respect. This is a view that was shared by a number of UK LOCKSS pilot participants. Other participants recognized that a considerable amount of content had only appeared in recent months. When planning involvement of publishers the considerable time taken to negotiate and make content available should be factored in.

- **Links between UK LOCKSS and the LOCKSS Alliance**

Several of the publishers approached by CCL were already in discussion with LOCKSS about possible content, and those publishers who worked with UK LOCKSS Technical Support also liaised with the LOCKSS Alliance Technical Support Team in the US. This reflects the fact that many NESLi2 publishers and other academic publishers of interest to the UK HE community operate on an international basis and may already have been approached by US libraries within the LOCKSS Alliance. Liaison with the LOCKSS Alliance has been good at both negotiation and technical levels, but given the length of time needed from initial contact to implementation, it is important to maintain good communication in order to minimize delays in making content available.

- **Importance to libraries of e-journal archiving**

It was very clear from survey responses that e-journal archiving was an important issue for librarians. The move to e-only and consequent freeing up of shelf space was generally dependent on having e-journal archiving solutions that would assure academic staff that titles would not be lost. This was not only a fear of 'catastrophic failure', but also of what would happen if the journal ceased publication or they ceased to subscribe. The attraction of LOCKSS was that libraries were in control of the content to which they were entitled. Survey members felt that publishers were not fully aware of the importance libraries attached to archiving in their move to e-only, and this is reinforced by a view from the publishers that demand for a service such as LOCKSS had not been established. In order to convince publishers to join LOCKSS and when agreed prioritise making content available to LOCKSS members, libraries need to make it clear to publishers that this is a very important issue for them. Having a coordinated approach in the UK can provide a benefit in doing this and lobbying publishers.



## 5. NESLi2 publisher negotiation

***To negotiate with the NESLi2 publishers for compliance with the LOCKSS programme;***

### 5.1. Overview

Responsibility for publisher negotiation was awarded to Content Complete Ltd, the JISC NESLi2 negotiation agents. Their role was:

- *To secure the participation of an agreed list of publishers in the LOCKSS initiative:*
- *To introduce them to the concept and discuss issues involved*
- *To obtain their permission for the LOCKSS system to collect and preserve the licensed journals*
- *To secure this permission by way of wording in the NESLi2 licence or letter of agreement*
- *To keep all NESLi2 institutions informed of the permissions given by publishers*

The original contract commenced on 1 December 2005 and ran until 31 December 2006. It was then extended until the official end of the project in February 2008, although CCL are for the moment maintaining contact with publishers who still have LOCKSS under discussion. As indicated in Section 4, negotiations were carried out with an agreed list of NESLi2 publishers and then later extended to a list of non-NESLi2 publishers.

The failure to secure more content cannot be attributed to the efforts of Content Complete Limited who have produced regular reports of their discussions with publishers and given presentations at workshops setting out the efforts they have made to get publishers on board and the difficulties they have encountered. Pilot members in the survey praised CCL for 'doing a difficult job well' and one felt that the pilot had been successful 'given that this preservation and access together makes publishers very nervous'.

### 5.2 NESLi2 licence

The model NESLi2 licence now contains a clause (clause 8.4) regarding continuing access and use of licensed material 'published and paid for within the Subscription Period' either by:

- i) *continuing online access to archival copies of the same Licensed Material on the Publisher's server which shall be without charge;*
- ii) *supplying archival copies of the same Licensed Material in an electronic medium ....to a central archiving facility operated on behalf of the UK HE/FE community or other archival facility ..... without charge;*
- iii) *supplying without charge archival copies via ftp protocol of the same Licensed Material<sup>21</sup>.*

This clause has been valued by libraries subscribing to NESLi2 e-journal deals, and it was clear both from the survey of pilot members and from the LIS-SCONUL survey that libraries were checking on whether this clause was included in publisher agreements as part of their decision to move a title to e-only.

The LOCKSS process suggests publishers give libraries permission to collect, preserve and provide access to their content in their license agreements, however this is not required. For NESLi2 publishers, suggested text was provided by CCL.

The original intention had been to include a clause giving this permission within the NESLi2

<sup>21</sup> <http://www.nesli2.ac.uk/ModelNESLi2LicenceMay07final.doc>

licence, but the small number of publishers who have completed the process does not make such an approach feasible. With the introduction of other e-journal archiving solutions, it is also not appropriate that JISC should specify LOCKSS as the only solution that publishers should use.

At the same time, given the interest in e-journal archiving from the JISC HE community and the number of solutions now available, it is appropriate for JISC to consider adding a clause to the model licence which specifies that publishers should be using an e-journal archiving service, and making them state which one they are using from an agreed list. This could help raise awareness of the importance attached to e-journal archiving, particularly among those small and medium publishers now becoming part of the SMP initiative, who may not yet have thought of e-journal archiving, and for whom LOCKSS might be the most appropriate solution.

### 5.3 Central negotiation

Central publisher negotiation is already a feature of the UK HE/FE library environment, where central deals such as those for NESLi2 bring benefits to the whole community. The use of central negotiation for LOCKSS introduced a new method into the LOCKSS Alliance, where in the US individual libraries are generally responsible for approaching publishers they wish to see as part of LOCKSS. This central approach is seen as a strength, and the model is being followed closely within the LOCKSS Alliance, and may be taken up by other non-US participants. Despite the amount of content negotiated by the UK LOCKSS pilot not yet appearing that significant, the Director of the LOCKSS program felt that the UK had contributed a good deal of content due to the power and funding behind the UK's central approach to negotiation compared to the more individual library approach used in the US. Although this central approach has failed to bring in the big publishers as hoped, it is important not to lose sight of the advantages of central negotiation in persuading publishers to allow libraries to build and preserve collections via LOCKSS. .

### 5.4 Negotiation post pilot

At the end of the pilot phase, it is unclear how publisher negotiation will continue, either for commercial publishers or for open access publishers. On the assumption that Content Complete will not continue in the role of negotiator for UK LOCKSS after the pilot phase, the following possibilities present themselves for future publisher negotiation:

- **LOCKSS Alliance**

Given that the majority of publishers operate on a global basis, one solution is to rely on the US libraries who first approach publishers through the LOCKSS Alliance to identify the publishers and for the central LOCKSS team to do all the negotiating and technical implementation. Individual UK libraries could do their own negotiations should they wish to on the same basis as US libraries currently do.

The advantages are that the system is already set up and new publishers and titles are coming on stream all the time. The disadvantage is that the potential for the UK voice to be heard will be lessened if selection of publishers is not seen as a role within the UK LOCKSS Alliance, and the strengths of central negotiation and NESLi2 licence requirements will be lost.

#### **UK LOCKSS Technical Support Service**

The UK LOCKSS Technical Support Officer is already the main day-to-day link between the UK LOCKSS Alliance and the LOCKSS Alliance itself, and works with both libraries and publishers. If negotiation with publishers were to be included in the role, this would need to be made clear, and account taken of workload issues already highlighted.

- **UK LOCKSS Alliance**

The OpenLOCKSS initiative has been led by the University of Glasgow and has involved the whole UK LOCKSS Alliance in the selection of titles. This community-led model could be extended to cover all types of publisher, though account must be taken of the amount of work involved and whether such a model would be sustainable.

Three libraries currently participating in the LOCKSS pilot have indicated that they would be willing to contribute further by negotiating with publishers.

## **5.5 Summary and considerations**

Negotiation with NESLi2 publishers has not been wholly successful, in that a number have opted not to join LOCKSS and a number of others remain undecided. In the light of publishers' reactions, and the availability of other archiving solutions, it is unlikely that all NESLi2 publishers will join LOCKSS and it is not appropriate to include it as a requirement of the model licence.

It has been established that negotiations on this are likely to take a long time, as it is not seen as a priority by publishers. Nevertheless, the negotiations have probably added to publishers' awareness of e-journal archiving and of LOCKSS. It is important to maintain that awareness, as libraries move to e-only and e-journal archiving takes on added importance.

- **Responsibility for future negotiation**

On the assumption that CCL are not to be responsible for publisher negotiation after the pilot phase, it is important to establish who will be responsible and how titles will be selected, and to make sure this is clear to UKLOCKSS..

- **Linking e-journal archiving to licensing**

It would be helpful if JISC included in the model licence a requirement for publishers to use one of the e-journal archiving solutions now available that meet the requirement of the JISC licensing language. This would illustrate the importance of this issue to libraries, and hopefully encourage publishers, including SMP publishers, to adopt one of the solutions.

## 6. Raising levels of community engagement

### *To raise levels of community engagement with the LOCKSS initiative*

#### 6.1 Overview

When the UK LOCKSS pilot started, there was a good deal of interest from HE libraries. 24 libraries joined the project initially with funding from JISC and a further 6 joined as associate members in July 2006, paying a fee for the two year period. All 30 libraries have stayed with the project and presented regular progress reports, 23 (77%) of them also providing detailed responses to the evaluation survey. The fact that these libraries have taken part through the two year project, is in itself an indication that there has been some sustained community engagement with UK LOCKSS pilot.

#### 6.2 How pilot members have engaged with the project

Communication with pilot members has been through email lists and the secure website, with regular meetings and workshops. Several pilot members highlighted this as an aspect that had worked well:

*The meetings and workshops have been useful and well organised, and the mailing list has worked well for announcing content releases, upgrades etc.*

One member particularly valued the contribution made by the US LOCKSS team to project meetings:

*I have really enjoyed the seminars/meetings at which Vicky Reich and David Rosenthal have given updates on how the technology and relationships with publishers are being developed. It's been great to get the international perspective and the "inside track" on publisher's views on digital preservation*

Outside the actual meetings, however, some pilot members felt there had been a lack of engagement:

*Engagement between partners (except at physical meetings) has been poor*

An important and often overlooked aspect of a project such as this is the opportunity offered to take part in a national project. For two pilot members this had been one of their reasons for joining:

*We also wanted to become involved in more JISC national projects and this seemed like a good start.*

*We are interested in being involved in R&D projects and this is one that 'beginners' could apply for.*

For another, in spite of some unresolved issues, being a member of the pilot had been a positive experience:

*However as members of the LOCKSS Pilot we are in a better position than before when we had nothing in place.*

During the period of the project, pilot members have built up a level of expertise that could be put to good use in future. From the evaluation survey, a number of pilot members are now prepared to take a more active role in the UK LOCKSS community.

### 6.3 Raising awareness of LOCKSS as an e-journal archiving solution

One indicator of actual or potential community engagement is whether the UK LOCKSS pilot has come to the attention of more people within participating institutions and in the wider community. The evaluation survey asked participants whether they felt that the UK LOCKSS pilot programme had raised awareness of LOCKSS itself, 16 respondents (80%) felt that being part of the LOCKSS pilot had raised awareness of LOCKSS within their own institution and among other pilot libraries, but were less sure of what extent awareness among non-participating libraries had been raised. Survey respondents praised the work of the LOCKSS project staff, who were felt to have done a good job in communicating issues via conferences and journal articles, but some survey respondents felt that there was a lot of scope for more publicity on LOCKSS for those outside the project, and that advocacy had been 'muted' while more concentration was given to technical aspects.

An email survey on the SCONUL HE library directors' email list, LIS-SCONUL, received 22 replies from libraries who were not members of the UK LOCKSS Alliance. After extracting the 30 libraries in the JISC pilot, this represents 16% of UK HE institutions listed in the annual SCONUL statistics. The aim of the survey was to find out the level of awareness of LOCKSS and the number of libraries who were interested in joining. It is accepted that replies were more likely to have come from those libraries who were interested in LOCKSS, so may not be representative of the whole sector. Asked if they were aware of LOCKSS, 19 respondents (86%) to the LIS-SCONUL survey replied 'yes', though three of these commented that they did not know the detail. This indicates that there has been some degree of success at raising awareness of LOCKSS outside the pilot community.

It should be noted that two European countries have been following the progress of UK LOCKSS and are keen to develop a LOCKSS network based on a similar model to UK LOCKSS. This provides an indication that UK LOCKSS has developed an international profile and is influencing approaches outside the UK.

### 6.4 Raising awareness of journal archiving issues

Evaluation survey respondents were asked whether they thought the LOCKSS pilot programme had been successful in raising awareness of journal archiving risks and surrounding issues. Most respondents felt there had been some raising of awareness, or that the pilot had encouraged discussion of digital preservation issues. Within their own institutions, several respondents reported that digital preservation was already an issue, but some felt that the pilot had raised little discussion outside the library. Outside the institution, most felt that awareness of e-journal archiving had increased during the project, but this was partly due to other emerging archiving initiatives.. Sixteen of 22 respondents (73%) to the LIS-SCONUL survey had considered preserving e-journal content, though six of these had not yet taken any practical steps.

### 6.5 Summary and considerations

The following issues have emerged which will need to be considered in relation to the continuation of UK LOCKSS after this pilot phase:

- **Community engagement**

30 institutions have been successfully engaged in the UK LOCKSS pilot for its duration. Pilot members have contributed to the project by writing regular progress reports and attending workshops. Members have welcomed involvement in the selection of non-NESLi2 titles and the selection of open access titles and some had hoped for more involvement in the content selection. Workshops and meetings have been popular,

though outside these, participation could perhaps have been more active, with more contribution to email lists.

Although some dissemination activities have been done during the pilot, the emphasis appears to have been more on setting up the network and work to generate content rather than strongly disseminating outside the UK LOCKSS members. Despite being difficult to accurately assess it appears that there is an awareness of LOCKSS in the community, to which the JISC pilot and conference presentations have undoubtedly contributed, however the level of detailed knowledge outside the pilot libraries may not be great. Interest from other countries in the UK LOCKSS model can be viewed as positive.

- **Raised awareness**

During the UK LOCKSS pilot, there are some indications that there has been a general raising of awareness on e-journal archiving issues throughout the HE community, perhaps helped in part by publicity surrounding other e-journal archiving solutions and UK dissemination activity through JISC and other bodies<sup>22</sup>. There is also an indication of increased demand from the HE library community for e-journal archiving as an essential factor in proposals to move to e-only and free up shelf space to create more study places. It can therefore be said that there is more community engagement with e-archiving in general, but it is hard to ascertain how much is due to UK LOCKSS.

- **Promotion of UK LOCKSS**

Further dissemination and promotion of UK LOCKSS will be valuable to raise awareness of LOCKSS as an archiving solution to the JISC community. This will be an important factor in encouraging others to join the UK LOCKSS network in the future as well as making UK LOCKSS more high profile to publishers. In the long term, consideration should be made as to who is best placed to promote UK LOCKSS. For example, will it be the responsibility of one individual centrally such as the LOCKSS Technical Support Officer, or should the responsibility for active dissemination be shared amongst the UK LOCKSS participants? Will it have any cost or resource implications in planning UK LOCKSS in the future? In the short term, urgent consideration should be given to how to actively promote UK LOCKSS to potential institutions who may wish to take part in UK LOCKSS after the pilot period ends in August 2008. All promotional information for this purpose should clearly outline what participants can expect in terms of types of content and expectations about contributing to the network.

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<sup>22</sup>

[http://www.jisc.ac.uk/news/stories/2007/03/news\\_ejournals.aspx](http://www.jisc.ac.uk/news/stories/2007/03/news_ejournals.aspx)

## 7. A self-sustaining UK alliance.

***To seed a self-sustaining UK alliance that will enable institutions to commit to the use of LOCKSS as an e-journal archiving solution following the end of the Pilot Programme.***

### 7.1 Overview

The DCC has provided strong leadership to UK LOCKSS and the LOCKSS Technical Support Officer has played a vital and wide-ranging role in building up and sustaining the UK Alliance. The JISC pilot programme was originally planned to run until February 2008, but was then extended until July 2008, to allow time for the evaluation and also for libraries who wished to join the alliance to plan payment for the new financial year. During the pilot phase, JISC, in partnership with CURL, has funded the UK LOCKSS Technical Support Service at the DCC, the publisher negotiations by CCL, and membership of the LOCKSS Alliance plus all hardware costs for the original 24 libraries in the pilot. The six associated members have made a contribution towards their costs.

In order to become completely financially self sustaining at the end of the pilot, UK LOCKSS needs to have 30 participating institutions to meet total costs in the region of £98,000 a year. In order to cover expenses with fees at this level, UK LOCKSS will need to attract new members in order to cope with the shortfall should any pilot members decide not to continue on a paying basis.

However, a significant factor in the sustainability of UK LOCKSS is that for the next year August 2008-July2009, JISC has offered to provide some top up funding should there be a shortfall of funds due to membership being below that required for full sustainability. This means that for the next year there is less pressure to be entirely sustaining. As a result the crucial point in judging whether or not UK LOCKSS will be truly self sustaining may be from August 2009 when there will be no additional funding from JISC<sup>23</sup>. Unless other sources of funding are found at this point, UK LOCKSS will need to be self financing from its members. The coming year therefore will be vitally important in the long term sustainability of UK LOCKSS. If less than 30 members participate, it will be necessary to retain members and work proactively to seek new members by August 2009. Apart from the financial element of sustainability a well functioning working community will benefit from scale and the influence it can exert as a large group.

Long term sustainability of UK LOCKSS was a concern for most pilot participants, all but 2 respondents to the evaluation survey expressed some concern over long-term sustainability, citing the following issues:

- need for critical mass of content (7 respondents)
- effective funding model and long term funding (7 respondents)
- growth in number of participating institutions (8 respondents)
- effect of other preservation systems (4 respondents)

The rest of this section explores some of the issues around sustainability of UK LOCKSS.

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<sup>23</sup> With the UK LOCKSS Pilot phase nearly concluded, JISC considers that the current onus is now on the community to decide which of the various available archiving options may suit their aims and objectives

## 7.2 Retaining existing pilot members

Pilot members were asked in the evaluation survey whether they were going to participate in the next year of LOCKSS. Results are shown in Table 2.

Likelihood of participation	Number	%
yes	7	30
probably	4	17
undecided	9	39
unlikely	3	13

**Table 2. Pilot members who may continue with LOCKSS**

Those who had replied 'yes' or 'probably' generally felt that more time was needed to evaluate the success of UKLOCKSS and that it was 'too soon to abandon it'. If they continued for a further year, there was therefore a question mark over commitment in future years.

For those uncertain, the main determining factors in making a positive decision were:

- resolution of link resolver issue to serve LOCKSS content to users
- obtaining critical mass of subscribed content
- budgetary uncertainty
- support of other institutions for the initiative
- comparison with other e-journal archiving services
- results of this evaluation

On the assumption that all those who would 'probably' continue and 4 of those who were undecided decide to remain with the project, this means that 15 out of 23 respondents (65%) may stay on for a further year, but only 7 of these (30%) are certain to stay.

Asked a similar question in the August 2007 progress report, 9 out of 30 project members (30%) stated they would definitely stay on, 1 would not join, and the remaining 20 (66%) were undecided, citing increased content as the main determining factor. Results are therefore similar.

Developing a sustainable UK LOCKSS Alliance depends crucially on the commitment of a significant number of pilot members continuing. The current lack of certainty on this demonstrates that in order to encourage more existing participants to continue attention must be paid to a means of increasing content and to completing link resolver interoperability.

At a workshop held in November 2007, pilot members were presented with a proposal to meet these costs using pricing by JISC banding rather than a flat fee for all participants. Banded prices for the first year have been calculated as in Table 3.

JISC Band	Annual Fee - Year 1 (£)
A	5,429
B	3,850
C	2,369
D	1,727
E-F	1,086

**Table 3. banding prices for joining UK LOCKSS 2008-2009**

While budgetary constraints are inevitably a factor in decision-making, most survey respondents felt the proposed pricing structure by JISC bands was fair, though two JISC A institutions felt participation was expensive' in view of the paucity of content' with costs for them similar to Portico:



*LOCKSS seems to be a splendid "cheap and cheerful" community-led development, but as a charged service it doesn't quite seem to measure up against its competitors*

### 7.3 Gaining new members

On an assumption that 15-20 pilot members will remain with the project, a further 10-15 institutions will need to be recruited to make UK LOCKSS a self sustaining community over the next year.

The LIS-SCONUL survey asked whether respondents would be interested in joining LOCKSS when it is offered as a fee-based service. The results are shown in Table 5.

Interest in joining LOCKSS	Number	%
Yes	9	40%
Possibly	10	45%
Undecided	1	4%
No	2	9%

**Table 5. Number of lis\_SCONUL survey respondents interested in joining LOCKSS.**

One potential UKLOCKSS member highlighted the pressures felt by libraries to discard print in order to make space for more study places as a reason for joining:

*This is of increasing importance as we are having to discard much more stock to make space for incoming merged collections. We are relying on electronic-only versions of high impact, heavy use material where as before, we always had a paper 'safety net'. In common with other HEIs, we are also having to make space for more study spaces. These drivers have become much more acute for us in the past two to three years.*

From this small sample, there is an indication that there is interest in joining LOCKSS, with 9 indicating a definite interest in joining, though in 3 cases with the 'depending on costs' proviso. Those who would 'possibly' join or were undecided felt that more information was needed in respect of:

- local technical requirements
- accessibility of content to users
- relevance of publishers
- administration requirements

One respondent felt that information on these factors was not readily available:

*I would want a lot more details on what we get for the money, how much of a contribution it makes to solving the problem and what our commitments are. These are not very clear from any of the information I have read from JISC or the DCC*

This survey suggests that there is interest in joining the UK LOCKSS Alliance, but that more dissemination of information is needed before further libraries will opt to join. When they become aware of some of the limitations that pilot members have identified (eg lack of major publishers), those who are potentially interested may express similar concerns to existing members. This is likely particularly to be the case if the current inability to serve content through link resolvers has not been satisfactorily resolved. It is important therefore in attracting new members to the UK LOCKSS Alliance that the system is marketed in a way that does not raise false expectations, that rather concentrates of what benefits LOCKSS can offer and how these can fit libraries' e-journal archiving strategies.

Evaluation survey participants were asked what might convince other institutions to join UK LOCKSS, and the following suggestions were made:

- **More journals, more long runs**  
Four respondents put this specifically in the context of moving to e-only and freeing up shelf space:  
*Would make shift to e-only politically easier by allaying concerns on long term access, even if archived content is never needed or used*
- **Support from pilot members**  
Advocacy and endorsement from pilot members was seen as important in encouraging others to join. It had to be demonstrated that the programme had met its objectives.
- **Emphasising benefits of LOCKSS**  
As shown above (section 3), the technical aspects of LOCKSS had worked well and there was a general view that LOCKSS offered a low cost, low tech solution, which allowed libraries to remain in control of their own subscribed content. Practical demonstrations of how it worked were suggested. Some felt that stressing the ownership and control by libraries would be important.
- **Cost effectiveness**  
LOCKSS needed to demonstrate that it offered a cost effective solution that compared favourably with other ways of preserving content

#### 7.4 How will the UK LOCKSS Alliance be managed in the future?

In looking at how the pilot project can lead to a self-sustaining UK LOCKSS community, it is necessary also to consider how such an alliance should be managed when the JISC project phase ends. The views of current members are valuable to consider. Those taking part in the pilot survey were asked how they felt the UK LOCKSS Alliance could best be co-ordinated and led after the pilot period. The following views were provided.

- **Central co-ordination**  
12 respondents felt there should be a central body to lead the initiative and to co-ordinate both technical support and publisher negotiation. While 4 hoped to see JISC in this role, a further 4 saw the DCC continuing in this role after its effective co-ordination of the pilot. Other suggestions for central co-ordination were the UK Research Reserve Project or the Research Information Network's Collaborative Collection Management and Storage Project.
- **Consortium/Steering Group/User group**  
Five respondents favoured a consortium approach, with a consortium of interested universities, or a steering group with representatives from JISC, DCC, the UK community and USLOCKSS, or a UK LOCKSS user group.
- **Project officer**  
Two saw the need for a project officer with good technical skills as an essential part of any future LOCKSS network.

In addition, for most respondents to the evaluation survey, it was seen as essential to establish an effective funding model and a means of securing long term funding, in order to maintain a central presence and technical support, and to allow for ongoing development work. There was concern that this support rested with just one person and it was not clear who would negotiate with publishers:

*without staff dedicated to it, it could easily wither away.*

At the same time, it needed to remain a cost-effective service.

It is not the purpose of this evaluation to make detailed proposals concerning the future structure of UK LOCKSS, but in order to set up a self-sustaining alliance, consideration needs to be given to the form it should take. Central co-ordination as with the pilot appears still the preferred form, though suggestions for more user involvement need also to be taken into account.

## 7.5 Involvement of members in the running of UK LOCKSS

It was as important as getting a critical mass of content to get a critical mass of institutions who could provide support for UK LOCKSS developments. Evaluation survey respondents were asked whether they were willing in principle to take an active role in the UK LOCKSS. Table 6 shows the responses.

Attitude to more active involvement with the UK LOCKSS community	Number	%
yes	7	30
no	9	39
possibly	7	30

**Table 6. Number of pilot members willing to take an active role in Uk LOCKSS.**

Some of those who answered yes or possibly suggested the following areas in which they might help:

- negotiation with publishers (5)
- plug-in development (4)
- governance (3)

One respondent saw an important role for LOCKSS in sharing skills among the community:

*Such a service would be of value to us if....it developed or trained other members of the UK LOCKSS network to develop the 'plug-ins' required to widen the range of content available;*

In the US, LOCKSS was developed around a community-based model. It will be beneficial in taking UK LOCKSS forward, both in sharing expertise and achieving more, if at least some of the members of the LOCKSS community can take a more active role.

## 7.6 Impact of other e-journal archiving systems

There is a question about the effect of other emerging e-journal preservation systems and what impact this might have in the future take up of LOCKSS. Would they undermine LOCKSS or can they work together? Currently the market for e-journal archiving solutions is an emerging one and is relatively immature. At the present time it is unclear what the market will be like in the long term and where LOCKSS will sit in the e-journal archiving landscape. At present however, it appears that there is not a 'one size fits all' solution to e-journal archiving with each approach having varied coverage and approaches and different advantages and disadvantages:

*At the moment we don't see any single preservation system which will comprehensively address all of our e-journal preservation needs and collections. It may be necessary to provide multiple solutions to ensure effective coverage and "insurance" in the short to medium term.*

It is outside the scope of this evaluation to consider in detail the merits and drawbacks of the various e-journal archiving solutions, however, readers are referred to a parallel JISC funded comparative overview of a number of e-journal archiving studies of relevance to the UK<sup>24</sup>.

Only five respondents to the evaluation survey were signed up to other e-archiving services, either Portico or CLOCKSS though others were actively considering them. For two pilot members at least this was not a reason to discount LOCKSS:

*I see this as a complementary service to LOCKSS, not as a replacement for it. Portico has more content and more of the bigger publishers, but it cannot give quick access to content in the way that LOCKSS can.*

*the buy-in from major publishers means that services like CLOCKSS and Portico have an advantage, but they do not offer Libraries assurance of access where there are temporary system failures or subscription problems. At this stage Libraries may choose to opt for multiple approaches, depending on costs and local resource issues.*

## 7.7. Summary and considerations

A LOCKSS community of 30 libraries has been set up and all libraries have continued through the project. This has been done with JISC funding and support from CURL, and the community is not yet self-sustaining although the pilot has done valuable work towards seeding a future sustainable network. The DCC has provided strong and committed leadership and the LOCKSS Technical Support Officer has provided invaluable support to pilot members and acted as an effective liaison with the US LOCKSS team.

There would appear to be sufficient interest in the community for UK LOCKSS to continue for a further year, with some pilot libraries staying on and new libraries joining. It is not certain, however, that the target of 30 libraries for full sustainability will be reached over the next year and some top-up funding from JISC may be called upon.

After the next year, if the UK Alliance does not continue, members have the option to remain individual members of the LOCKSS Alliance or to retain the content they already have, but without the additional titles and technical support of the Alliance. If this happens, the chance for the UK to influence the content and technical development of LOCKSS is much diminished.

Many questions remain about the long term sustainability of UK LOCKSS. It is not clear what will happen if less than 30 institutions take part from August 2009. Will LOCKSS be unsustainable or will the costs to those who do continue be raised? In contrast it is not clear what will happen should considerably more than 30 institutions sign up for LOCKSS and whether the current level of resourcing for DCC will be sufficient. It is unclear whether there is sufficient resource costed in for the next year to not only manage the technical aspects, but to undertake what is likely to be considerable negotiating work and marketing. Despite this it is evident that with sufficient enthusiasm UK LOCKSS could continue as a community and benefit from the single voice that a country wide community can bring.

Regardless of whether UK LOCKSS becomes self sustaining during the next year or requires some support from JISC, the next year will be crucial for the future of UK LOCKSS. The following are considerations arising from the analysis:

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<sup>24</sup> Morrow, T. et al. (2008) A Comparative Study of e-Journal Archiving Solutions: A JISC Funded Investigation

- **Gaining new members**

In order to create a self-sustaining community in the longer term, it is essential to build up the number of libraries and at the same time ensure that they have realistic expectations of what LOCKSS can offer. Alongside the benefits offered for most libraries by the LOCKSS technical system, there needs to be a clear statement of the type of material most suited for preservation in LOCKSS and possible limitations. While major publishers may join, the most likely sources of content are small and medium publishers and open access publishers.

It is important that sufficient information is provided for promotion to new members. Marketing should focus on its benefits and achievements over the pilot as well as the many uses that LOCKSS has. Consideration should be made of having a town meeting for new institutions taking part where more information about LOCKSS can be provided as well as enabling interested institutions to ask questions to inform their decision making. New potential members could also be referred to those who are continuing in UK LOCKSS to find out about their experiences.

- **Retaining existing members**

There are a number of current pilot members who are undecided about continuing. Work should be undertaken to establish whether their concerns can be addressed in order to retain them as members. A key technical issue is the ability to serve content to users. A firm timescale for a solution to this should be provided to existing members to assist them in making a decision about continuing.

- **Encouraging community engagement**

A self-sustaining community implies not only one which is self-funding, but also one where members feel part of a community and have a role to play. While the US model where individual librarians do the negotiation does not fit neatly with the more centralised approach adopted here, a central organisation should be backed by an active user group, with views of the community sought on titles for inclusion in LOCKSS and perhaps help with negotiation and other aspects. This of course depends on the community being willing to take on this wider role, but there are indications of a willingness among the pilot members.

- **Marketing and promotion**

Marketing and promotion will be important in the short term to attract new members after the pilot period and also throughout the next year to make more publishers aware of LOCKSS and of the strength of the UK community approach and to attract further members, if required, when the need to become completely self sustaining arises from August 2009. To date promotional activities have been limited as the focus has been on setting up the community and gathering content. In the future a more proactive approach to marketing is likely to be necessary. Consideration will need to be given as to who is best placed to do this and whether sufficient resources are in place to assist.

- **Clarity on the governance structure for UK LOCKSS**

Existing and new members will expect clarity about the governance model for UK LOCKSS as it moves forward. This needs to be clearly articulated. With other emerging e-journal archiving solutions it may not be appropriate for JISC or other relevant professional bodies to take the lead on this. The DCC has shown a strong commitment to the project and should continue to play a central role.

- **Clarity on long term costs and funding implications**

Existing and new members will expect clarity about long term costs of joining UK LOCKSS and what might happen after the next year depending on the numbers of members recruited when any subsidy from JISC is no longer available.

## 8. Conclusions

E-journal archiving has become of increasing importance to HE libraries over the past few years. Libraries are under pressure to release shelf space taken up by print volumes in order to create more study places. Moves to e-only have become a strategic objective for many libraries. At the same time, academic staff need to be assured that in disposing of print volumes arrangements are in hand to ensure continuing access to subscribed titles in the event of these titles ceasing publication, the library cancelling its subscription or access through the publishers' website becoming unavailable either temporarily or permanently.

LOCKSS is just one of the e-journal archiving solutions now available. The UK has been innovative in setting up a LOCKSS network on a countrywide basis. The UK LOCKSS pilot project has provided the opportunity for a group of libraries to test the technology and to consider the suitability of LOCKSS to meet their requirements. At the end of the pilot phase, this evaluation has considered how far the project has met the objectives set for it, and whether the UK LOCKSS Alliance can now become self-sustaining.

To a certain extent, the UK LOCKSS pilot project can be said to have achieved its overall aims, in that it has established a UK LOCKSS Alliance of 30 libraries all of whom now have operating LOCKSS boxes using a technology described by one pilot member as:

‘(almost) a no-brainer: low cost, (fairly) low technical skillset requirement, low maintenance, international collaborative non-commercial, supported by JISC as one of the range of preservation solutions, etc.’

Individual elements of the UK LOCKSS pilot have varied in the extent to which they have been achieved during the pilot period as this evaluation has demonstrated.

### Technical support

The UK LOCKSS pilot has enabled the development of a technical support presence outside the US. Although inevitably there have been some technical problems in setting up the libraries, these have been few and mainly dealt with promptly and satisfactorily. The UK LOCKSS Technical Support Service set up by the Digital Curation Centre has worked well, with good liaison with the US technical support team. The LOCKSS Technical Support Officer, appointed to provide technical and related support to UK LOCKSS members, has played a central role and responded as far as possible to suggestions for changes and improvements made by members.

A key improvement that the UK participants hope to see is the ability to serve content to users through link resolvers and it is vital that a solution to this is developed in the short term. Proxy server integration has proved challenging for a variety of possible reasons.. The UK LOCKSS community has been instrumental in identifying differences between the US and the UK in this respect and lobbying for an alternative means of delivery via link resolvers. As a result the LOCKSS Alliance are working to provide this solution.

While delays in implementing publisher content were not mainly due to technical issues, there did appear to be technical problems which made the procedure less straightforward than it might have been. It is not clear whether this was due to workload pressures in the UK or in the US, or to problems encountered by the publishers' own systems when setting up the manifest pages. Technical implementation generally involved both UK and US support teams and needs continuing good co-operation.

There remain some ongoing incremental improvements to be made including more technical documentation and improvements to the ease of use of the administrative interface. Over the longer term efforts to distribute the technical expertise within UK LOCKSS would be valuable.

## Building a substantial collection of e-journals

The aim of building a substantial collection of e-journals to which participating institutions have archival rights has not been wholly achieved in the manner envisaged at the beginning of the pilot. In particular, a number of the larger NESLi2 publishers have not joined LOCKSS as was hoped at the outset. Obtaining more publisher content of relevance to the UK community is a high priority for the future. Failure to attract the major NESLi2 publishers has been a great disappointment to pilot members, especially given the original expectation that most NESLi2 publishers would become members of LOCKSS. On the other hand, members appear to have accepted that the large NESLi2 publishers are unlikely to join LOCKSS now that other e-journal archiving solutions are available, and that the LOCKSS model may in fact be more suited to small and medium size publishers and to open access publishers whose content is likely to be higher risk.

Although progress has been slow, publisher negotiations will eventually succeed in making some 30% of NESLi2 titles available through LOCKSS, if all current plans come to fruition. Pilot members have appreciated the titles already available in LOCKSS, particularly those hosted on Highwire Press and Project Muse, while the US LOCKSS Alliance have gained from the central negotiating power of the UK system in attracting in some important publishers such as Taylor & Francis and Annual Reviews, which is hosted on Atypon.

Some publishers are supplying only a limited number of titles, or a limited range of issues of these titles to LOCKSS. While it is understandable that publishers wish to retain their commercial position with the sale of backfiles, the patchy nature of coverage of some titles does not help libraries who wish to dispose of print stock.

## NESLi2 publisher negotiation

Negotiation with NESLi2 and other publishers for compliance with the LOCKSS programme has not been wholly successful, in that a number have opted not to join LOCKSS and a number of others remain undecided. Despite the best efforts of Content Complete Ltd to negotiate on behalf of UK LOCKSS many larger publishers have shown reservations about joining LOCKSS and the emergence of alternative archiving solutions has complicated the situation.

The original priority of ensuring that all NESLi2 content was available through LOCKSS<sup>25</sup> is no longer valid. Other Solutions are now available and at this particular stage, it would be inappropriate for JISC to prioritise one system over another. On the other hand, the UK LOCKSS pilot has demonstrated the importance libraries now attach to e-journal archiving and JISC can support this by including a clause in the model licence that requires NESLi2 publishers to make arrangements to use one of a recommended list of archiving solutions, including LOCKSS. The NESLi2 SMP licence may provide some opportunities for LOCKSS to be considered as an archiving solution for small and medium publishers.

The UK LOCKSS pilot has demonstrated the long timescale needed for negotiating with publishers and the additional timescale needed to release content after agreement has been reached. There have been very long delays in getting publisher content into LOCKSS since negotiations started in August 2006. Several publishers who agreed to take part in LOCKSS at the start of the pilot are still listed as 'in process' on the LOCKSS website and only two publishers have content available. Where publishers have been willing to join LOCKSS, these delays have been mainly due to the low priority given to the necessary technical work and the low demand they perceived from the HE library community. These long delays are one important reason why

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<sup>25</sup> Hockx-Yu, Helen. Establishing a UK LOCKSS pilot programme. *Serials* 19 (1), March 2006. Available at: <http://uksg.metapress.com/app/home/contribution.asp?referrer=parent&backto=issue,13,19;journal,7,61;linkingpublicationresults,1:107730,1>



it is important to continue the project for a further year to give time for the remaining publishers to make content available and to allow project members time to assess the value of the additional content.

Negotiations conducted by the University of Glasgow for the OpenLOCKSS project were time consuming, however that group has streamlined processes along the lines of the US LOCKSS team and should proceed with less effort moving forward.

### **Raising levels of community engagement**

THE UK LOCKSS Pilot has successfully established a community of 30 UK LOCKSS libraries and has raised awareness of LOCKSS as an e-journal archiving solution among this group by workshops and presentations. The pilot has made some contribution to raising levels of awareness of the LOCKSS initiative. However, it is hard to ascertain whether there is more awareness of e-journal archiving generally in the HE community due to publicity for other services as well as LOCKSS.

Increased publicity about UK LOCKSS will be important in engaging more members in the UK LOCKSS community. Libraries who were interested in joining asked for more information on how it worked and what would be required of them. Libraries themselves recognise that there is more than one solution; there is no 'one size fits all', but LOCKSS may well be an appropriate choice for some libraries, either on its own or with other services. It has a particular attraction in putting archived content in the control of the library rather than the publisher or archive service. In order to encourage more members to join UKLOCKSS in the coming year, more attention should be given to how the service is promoted and marketed.

### **A self-sustaining UK alliance.**

The UK LOCKSS pilot has undertaken good first steps towards seeding a self- sustaining UK community, but has not yet succeeded in creating a completely self-sustaining community. At least 30 members are needed for UK LOCKSS to become self-funding. The evaluation survey suggests that about half the pilot members may stay on, meaning that at least 15 new libraries will have to join to move to a self funding model. Resolution of the link resolver issue, improvements in the interface and documentation, and a clearer statement as to content may help persuade more pilot members to stay. More publicity and marketing is needed if sufficient numbers of new members are to join and feel that LOCKSS offers them good value for money and an appropriate e-journal archiving solution.

As the project moves from the pilot phase, there is a question on how it should be managed over the longer term. Management needs to take account of technical support, publisher negotiation, training and awareness raising among members and potential members. Central co-ordination with the DCC or another body was the preferred option from pilot members, though most members also indicated that they may be prepared to become more involved themselves in its running. Now that a group of libraries have built up expertise, it makes sense to use this both in promoting the service to new members and in contributing to its activities. In this way a self-sustaining community can be built up and hopefully grow.

The coming year will be crucial to the future of UK LOCKSS. Efforts need to focus on making UK LOCKSS fully sustainable so that the UK can fully benefit from having a united UK presence.

## 9. Recommendations

The following recommendations concern the ongoing development and sustainability of the UK LOCKSS Alliance. They are presented under the five evaluation themes.

### Technical support

1. Work to develop functionality to serve content to users via link resolvers should be completed urgently. The US team has scheduled completion for titles hosted on major platforms Summer 2008.
2. The model of technical support should be developed to reduce the potential risk of loss of expertise through relying on a single individual to provide support in the UK. Consideration should be made to cascading technical expertise and activities more widely amongst UK LOCKSS participants.
3. The role of the Technical Support Officer should be reviewed to ensure that sufficient resource is in place to support the UK LOCKSS community. During the pilot the role of LTSO has been wide reaching. If the LTSO is to fulfil additional activities such as publisher negotiation and advocacy, adequate resources should be allocated for this.
4. Technical problems arising from publishers setting up manifest pages should be speedily resolved in collaboration between the UK and US support teams.
5. Ongoing activity to respond to technical issues should be continued. This includes work to improve the technical documentation to enable understanding both from technical and library staff and improvements to the LOCKSS administrative interface.

### Building collections of archival content

6. UK LOCKSS needs to identify the type of publisher whose content is most at risk and who is most likely to join LOCKSS. While not wholly discounting major publishers, more effort should be concentrated on identifying small and medium publishers in collaboration with pilot members and others who join the project. Consultation with participating members should be continued as a means of prioritising content for inclusion.
7. UK LOCKSS should continue to work with Open Access publishers of interest to the UK HE community.
8. UK LOCKSS should work with JISC Collections to explore whether there are opportunities available as a result of the new NESLi2 SMP initiative to gather new publisher content. This could include working with hosting companies such as Ingenta to make them LOCKSS compatible.
9. Publishers who agree to participate in LOCKSS should be encouraged to make all titles and all issues available through this route, apart from titles which can be purchased outright through backfile collections.
10. Publishers need to be made aware of the importance libraries place on e-journal archiving solutions so that they give it greater priority. This can partly be achieved through the NESLi2 licence requirements but also by libraries themselves putting pressure on publishers to state their policies on e- journal archiving. UK LOCKSS members will need to play an active role in this process to maximise its impact.
11. During the next year of the project, attention should be given to making sure that all publishers currently 'in process' make content available so that the effects of additional

content made available through the pilot can be fully evaluated.

### **Publisher negotiation**

12. JISC to include in the model licence for NESLi2 deals an explicit requirement that publishers are registered with at least one of a recommended list of archiving services, which would include LOCKSS.
13. Clear expectations and responsibilities about who undertakes publisher negotiations in the next phase of UK LOCKSS is needed. If this involves community members these expectations need to be made explicit.

### **Community engagement**

14. Urgent attention should be given to actively promoting UK LOCKSS to potential institutions who may wish to take part in UK LOCKSS after the pilot period ends in August 2008. Consideration should be given to hosting a briefing session where interested parties can ask questions and meet members who have participated in the pilot. Information for advocacy purposes should be clear about what can be expected from joining UK LOCKSS. This should include benefits and limitations and realistic expectations about the type of content that is likely to be available.
15. Over the coming year efforts to disseminate information about LOCKSS should be continued in order to raise awareness of LOCKSS to other institutions who may wish to participate from August 2009. Further awareness raising will also assist in making publishers aware of UK LOCKSS as an archiving solution and the UK LOCKSS community as an important client group. Consideration will need to be made of who is best placed to do this and whether sufficient resources are in place to support this.
16. UK LOCKSS uses a community based model of engagement which provides one of its potential benefits. Continued effort should be taken to encourage participation by the UK LOCKSS community over the next year. This should include more experience sharing events. In addition, at an early stage the community should identify and draw upon those members who are willing to actively contribute more to the LOCKSS community.
17. JISC should consider running awareness raising events for the JISC community which can provide information about the whole range of e-journal archiving solutions available.

### **Sustainability**

18. Consideration should be given as to how UK LOCKSS will be managed at the end of the pilot phase and who will be responsible for management and co-ordination of technical support, content negotiation, training and awareness-raising. Any new model should consider how existing pilot members could make an active contribution which draws on the expertise they have built up. The DCC has shown a high level of commitment to the UK LOCKSS pilot and should be a key stakeholder in any future governance model for UK LOCKSS.
19. The next year will be crucial to the ongoing success of the UK LOCKSS Alliance. If sufficient members are not recruited and retained, the service will no longer be viable. Every effort should therefore be made to address the issues raised by pilot members, to set up an appropriate management structure and to market the service to potential new members.
20. Work should be undertaken to develop clear funding scenarios for August 2009 and beyond. Failure to address this at an early stage may discourage new participants.

21. As the next year will be vital to either build or maintain a self sustaining community evaluation should be undertaken throughout the next round of UK LOCKSS to inform its future development.

## Appendix 1. UK LOCKSS Pilot Evaluation Survey

### Questions for participating institutions.

*Please answer the following questions in detail*

1. What were your main reasons for taking part in the UK LOCKSS pilot?
2. Has the pilot met your expectations? (Please provide details).
3. Have you encountered any technical problems that could not be resolved by the LOCKSS Technical Support Service (LTSS)?
4. How successful has the LOCKSS Technical Support Service been in providing you with appropriate support?
5. How successful has the UK LOCKSS pilot been in building collections of e-journals to which participating institutions have archival rights.
6. How successful do you feel the negotiations with publishers have been during the pilot?
7. Do you think the LOCKSS Pilot Programme has been successful in raising awareness of journal archiving risks and surrounding issues? (Please consider this both within your institution and outside your institution)
8. Do you think the LOCKSS Pilot Programme has been successful in raising awareness of the LOCKSS journal archiving solution? (Please consider this both within your institution and outside your institution).
9. What has worked well during the pilot? What hasn't worked so well?
10. Is there anything you would like to see improved over the next year of UK LOCKSS?
11. Are you going to participate in the next year of UK LOCKSS? (If yes - what has convinced your institution to take part? If undecided - what would convince your institution to take part? If no - what has made your institution decide not to continue?)
12. What do you think about the pricing structure for the next year of UK LOCKSS? Is this an important factor in your decision on whether to continue?
13. After the pilot period how could the UK LOCKSS Alliance best be coordinated and led?
14. Would you be willing in principle to take an active role in the alliance? (e.g. contributing to governance? Negotiations with publishers? System and plugin development?)
15. Do you have any concerns about the long term sustainability of UK LOCKSS? If so, what is needed to sustain the current UK LOCKSS community for the long term?
16. What do you perceive as the most critically important content to put into UK LOCKSS?
17. What might convince others institutions to join UK LOCKSS?
18. Have you investigated or signed up to any other e-journal preservation services e.g. Portico? Please provide details.

19. Which of the e-journal preservation services you use has given you the most confidence in their long term sustainability?

20. Approximately how many of your e-journal titles are not, as far as you are aware, currently covered by any e-journal preservation services? What proportion is this of your total e-journal collection?

21. What do you feel the top priorities for the next year of UK LOCKSS activity should be?

Thank you for taking the time to complete this survey.  
Your responses are appreciated.

## **Appendix 2 Lis-Sconul UK LOCKSS Survey**

1. Are you aware of the LOCKSS initiative?

2. Have you considered how to preserve your e-journal content when subscriptions are cancelled or the journal ceases publications?

If yes, what steps have you taken to preserve content?

3. Do you see LOCKSS as a possible solution?

4. When LOCKSS is offered as a fee-based service to libraries at the end of the pilot phase would you be interested in joining?

If no, please give your reasons